

No. 706,920.

Patented Aug. 12, 1902.

G. FRASER, JR. & S. E. FRASER.
REVOLVING VACUUM FILTER FOR RECOVERING THE LIQUID FROM SLIMES, SANDS,
PULP, OR SUCH LIKE IN CONNECTION WITH CYANID OR OTHER
CHEMICAL APPLICATIONS.

(Application filed Apr. 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.

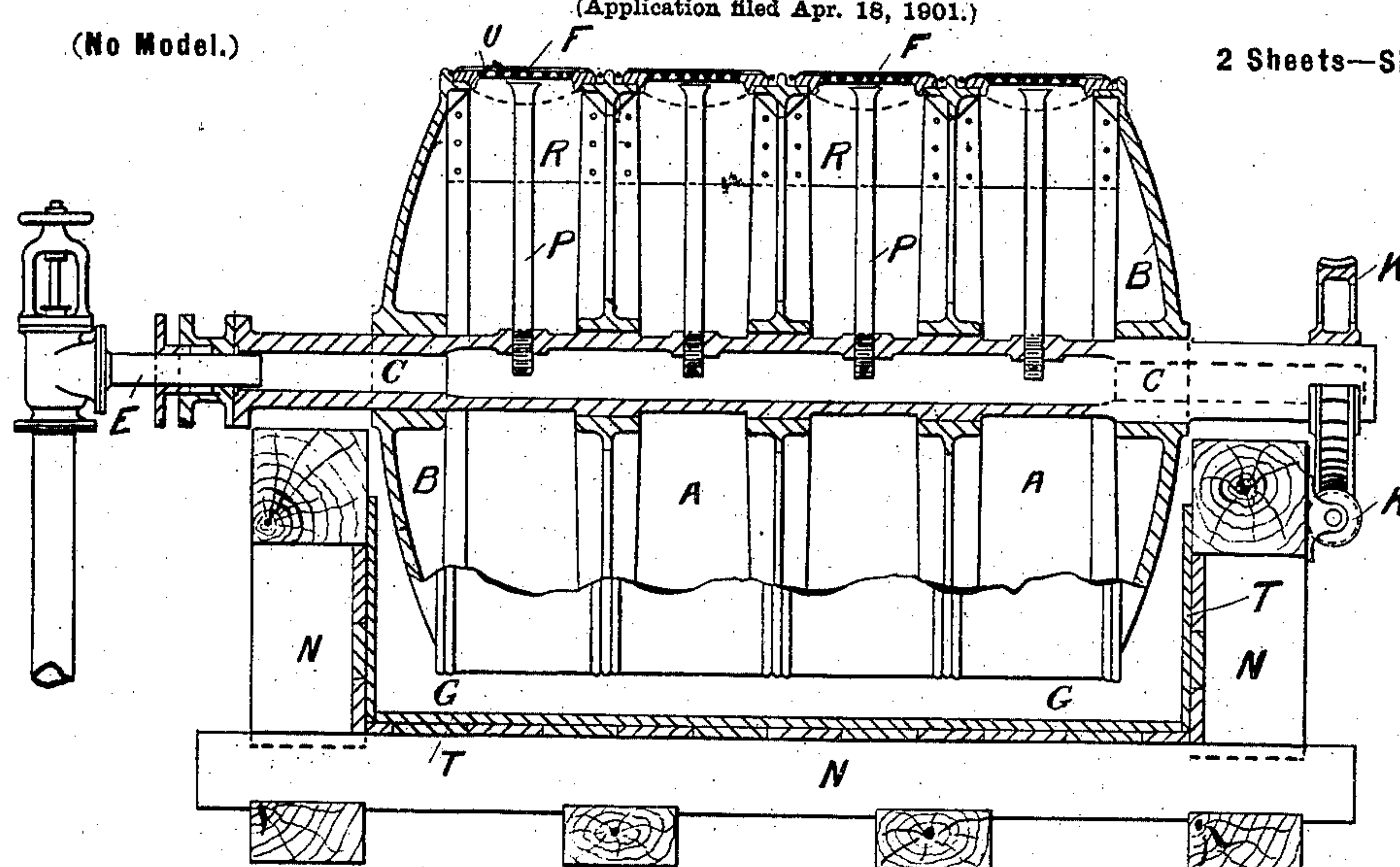
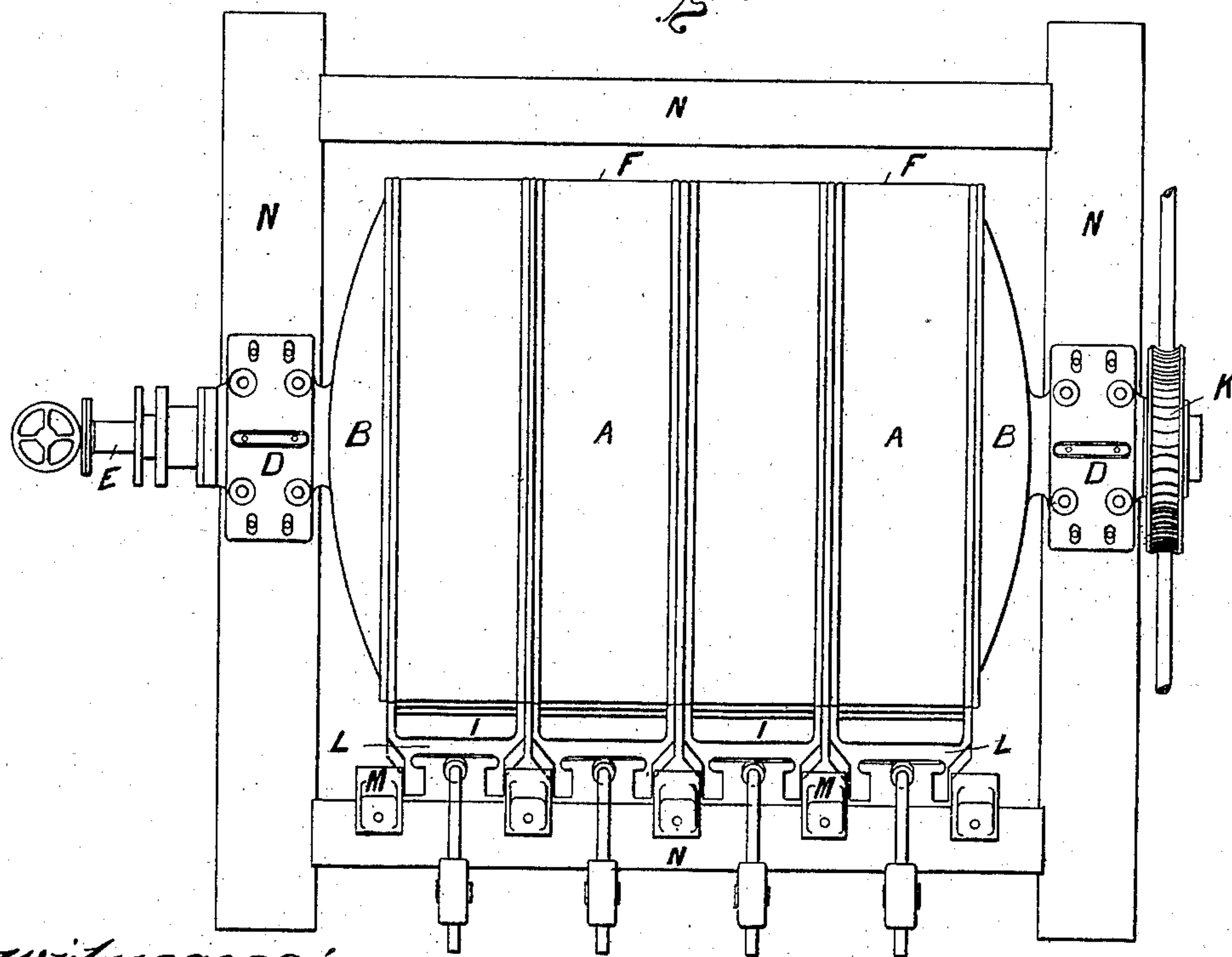


Fig. 1.



witnesses:

W. B. Keefe

Dennis Dumbly

Fig. 2.

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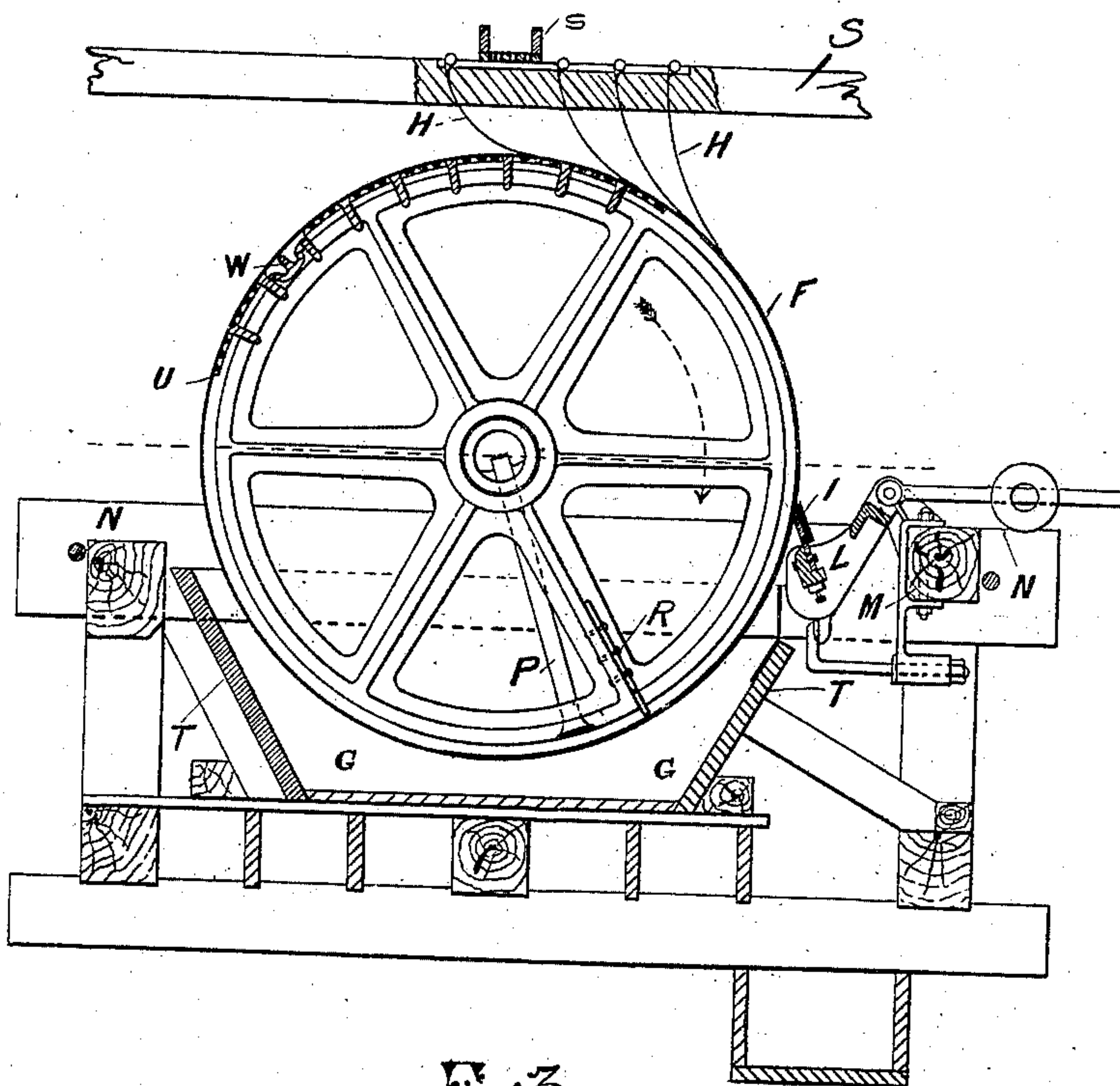


Fig. 3.

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UNITED - STATES - PATENT - OFFICE.

GEORGE FRASER, JR., OF AUCKLAND, AND SAMUEL EDGAR FRASER, OF
WAIKINO, NEW ZEALAND.

REVOLVING VACUUM-FILTER FOR RECOVERING THE LIQUID FROM SLIMES, SANDS, PULP, OR SUCH LIKE
IN CONNECTION WITH CYANID OR OTHER CHEMICAL APPLICATIONS.

SPECIFICATION forming part of Letters Patent No. 706,920, dated August 12, 1902.

Application filed April 18, 1901. Serial No. 56,513. (No model.)

To all whom it may concern:

Be it known that we, GEORGE FRASER, JR., engineer, a resident of the city of Auckland, and SAMUEL EDGAR FRASER, engineer, a resident of Waikino, in the Provincial District of Auckland and Colony of New Zealand, subjects of His Majesty the King of the United Kingdom of Great Britain and Ireland, have invented a certain new and useful revolving vacuum-filter for recovering the liquid from slimes, sand, pulp, and such like in connection with cyanid or other chemical applications, of which the following is a specification.

This machine, as its title indicates, is for recovering the liquid from slimes, sands, pulp, and such like in connection with cyanid or other chemical application. It consists of a cylinder with a perforated surface covered by porous material. The interior of the cylinder is under constant vacuum when in operation. The porous material as the cylinder is made to revolve absorbs the pulp from the box beneath the machine and a displacement-wash is supplied to the upper portion of the cylinder by trailing blankets, while the liquid is drawn away through an internal stationary pipe and the residue is stripped from the filter-cloth by an adjustable or fixed knife.

The accompanying drawings show three figures, of which—

Figure 1 is a front sectional elevation of the machine. Fig. 2 is a plan of the machine, and Fig. 3 is an end section.

The machine consists of cylinder A, with a perforated surface U, as partly shown in Figs. 1 and 3. The interior of the cylinder is under constant vacuum when in operation. The ends B are adjusted to the trunnion-shaft C and with it rotate in the bearings D. An internal stationary pipe E is provided for vacuum connection and for drawing off the liquid from the interior. Porous material F is fixed as a filter medium upon the outer surface of the cylinder A, so as to form a fixed cover. The cylinder A is so adjusted that as it turns it passes through slimes G or such like in the vat or box T. A displacement-wash is conveyed to the upper side of the filter medium F by blankets or the like mate-

rial H from the supply-trough S. A knife I, hinged on metal holder L, is provided to remove the residue from the filter-cloth F. This holder L is swung on a suitable bracket M, attached to the frame N, in which the whole machine is set. Pipes P are provided for drawing off the liquid from the interior of the cylinder A, and retaining-boards R serve to hold the liquid, so that the pipes P can carry it around into the trunnion-shaft C.

The cylinder A is made to revolve by means of any suitable form of driving-gear, and a vacuum is formed inside of it. The lower portion of the cylinder A, with the filter cloth or medium F, by the constant rotation is always in the slime or pulp G within the box T, and the cloth F is thereby continually absorbing the slime or pulp, thus making the feed automatic, and by the vacuum within the cylinder A the liquid in the slime, pulp, or such like is drawn from the cloth F through the perforated surface U to within the cylinder A, while the solids adhere to the outside of the filter-cloth F, which solids will vary in thickness, according to the speed the cylinder A is made to travel through the pulp G and the strength of the vacuum. The cylinder A thus rotating is continually presenting a fresh surface of the filter-cloth F to the remaining slime or pulp. The machine can be so regulated in speed that by the time the cylinder A has rotated around to the displacement-wash at its top part the liquid or moisture of the pulp G adhering to the filter-surface F will have been drawn off to within about thirty per cent. of absolute dryness. At this stage the displacement-wash supplied from the trough S is conveyed by capillary attraction, by means of trailing blankets or such like H, to the upper portion of the cylinder, as shown in Fig. 3, to properly saturate the semidry material on the filter-cloth F, and by the time the cylinder A has rotated around to the point of discharge the adjustable knife-blade I strips the residue on the filter-cloth F from it, the knife I being set up close to the surface of the cloth F for this purpose, but so as not to cut it. The filter-cloth surface being thus cleaned it is again ready to pass into the pulp G, and in this way continuous treat-

ment is given for the separation and drawing of the liquid from the slime, pulp, and other semisolids G which may be in the box T.

The trough S has a porous bottom of some suitable kind which allows the washing-water to pass therefrom and along the more or less hollowed-out support S' on which said trough rests, whereby such water soaks into the blankets H and through the same reaches the filtering-cloth F, as hereinbefore set forth.

The part W (marked on Fig. 3) is a recess for calking the end of cloth F.

The pipes P (shown in Figs. 1 and 3) are fixed to the shaft C and are located inside of the cylinder A and are for drawing off the liquid that has been drawn or filtered through the filter-cloth surface F to the interior of the cylinder A. Shown projecting downwardly in Fig. 3 is a retaining-board R, which serves to carry the liquid around for a sufficient length of time for the pipe P to allow the liquid to be drawn into the trunnion-shaft C by the vacuum, from whence it passes through the stationary pipe E on to the receiver.

Though the knife I is shown in drawings as adjustable, it can be either adjustable or fixed, as may be found most suitable.

Having fully described our invention, what we desire to claim and secure by Letters Patent is—

1. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, and means for applying water to said blanket or blankets.

2. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, means for applying water to said blanket or blankets, and a knife arranged between the blanket or blankets and the trough and adapted to scrape said periphery.

3. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, means for applying water to said blanket or blankets, a hollow shaft for supporting said cylinder, and a plurality of pipes extending from said shaft and opening into the cylinder.

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Witnesses:

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